1155-14-442 **Sabrina Pauli*** (sabrinp@math.uio.no). *Lines on a Quintic Threefold.*

A smooth cubic surface contains 27 complex lines. There are two types of real lines on a smooth cubic surface called hyperbolic and elliptic, and the number of real hyperbolic lines minus the number of real elliptic lines on a real smooth cubic surface is equal to 3. Motivated by Morel's Brouwer degree which takes values in the Grothendieck-Witt ring $GW(k)$, Kass and Wickelgren define the type of a line on a smooth cubic surface defined over a field k as an element in $GW(k)$ and show that the sum over the types of the lines on a cubic surface equals $15\langle 1\rangle + 12\langle -1\rangle \in GW(k)$ which recovers both the complex (take the rank) and real count (take the signature).

In my talk I will define the type of a line on a quintic threefold in $GW(k)$. There are infinitely many lines on the Fermat Quintic threefold $X = \{F = X_0^5 + X_1^5 + X_2^5 + X_3^5 + X_4^5 = 0\} \subset \mathbb{P}^4$. However, a generic deformation X_t of X contains only finitely many lines. I will compute the types of the finitely many deformed lines and show that they do not depend on the chosen deformation. Summing up all those types one gets $1445\langle 1\rangle + 1430\langle -1\rangle \in GW(k)$ which again recovers the complex and real count of lines on quintic threefolds. (Received January 20, 2020)